

INTERSTATE COMMERCE COMMISSION

WASHINGTON

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REPORT NO. 3542

ST. LOUIS-SAN FRANCISCO RAILWAY COMPANY

IN RE ACCIDENT

NEAR EDWARD, KANS., ON

OCTOBER 24, 1963

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SUMMARY

Date: October 24, 1953

Railroad: St. Louis-San Francisco

Location: Edward, Kans.

Kind of accident: Derailment

Train involved: Passenger

Train number: 105

Engine number: Diesel-electric units 2007 and 2011

Consist: 15 cars

Speed: 55 m. p. h.

Operation: Time-table, train orders, and automatic block-signal system

Track: Single; 2°05' curve; 1.0 percent descending grade southward

Weather: Clear

Time: 1:40 a. m.

Casualties: 19 injured

Cause: Broken rail

INTERSTATE COMMERCE COMMISSION

REPORT NO. 3542

IN THE MATTER OF MAKING ACCIDENT INVESTIGATION REPORTS  
UNDER THE ACCIDENT REPORTS ACT OF MAY 6, 1910.

ST. LOUIS-SAN FRANCISCO RAILWAY COMPANY

December 14, 1953

Accident near Edward, Kans., on October 24, 1953, caused  
by a broken rail.

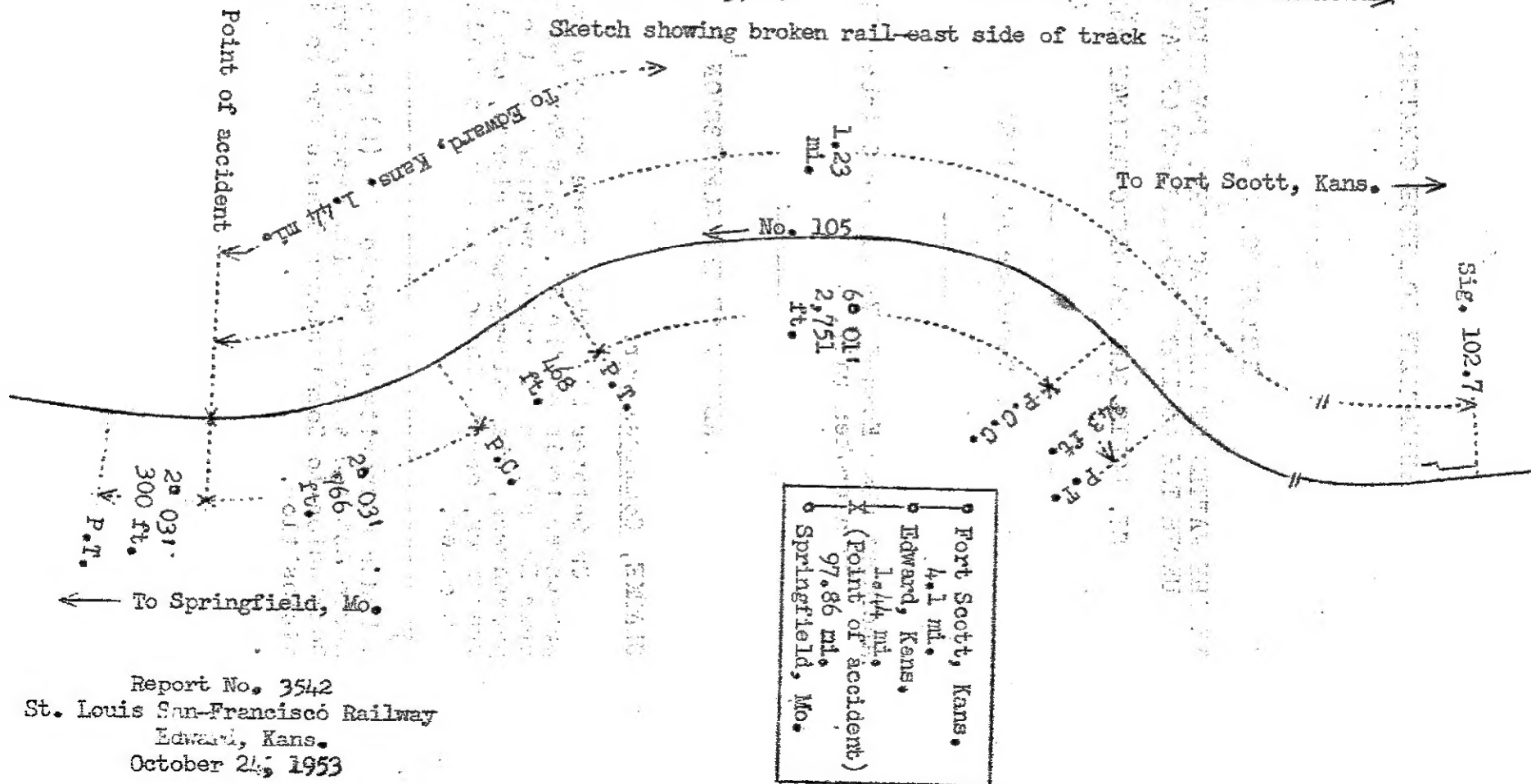
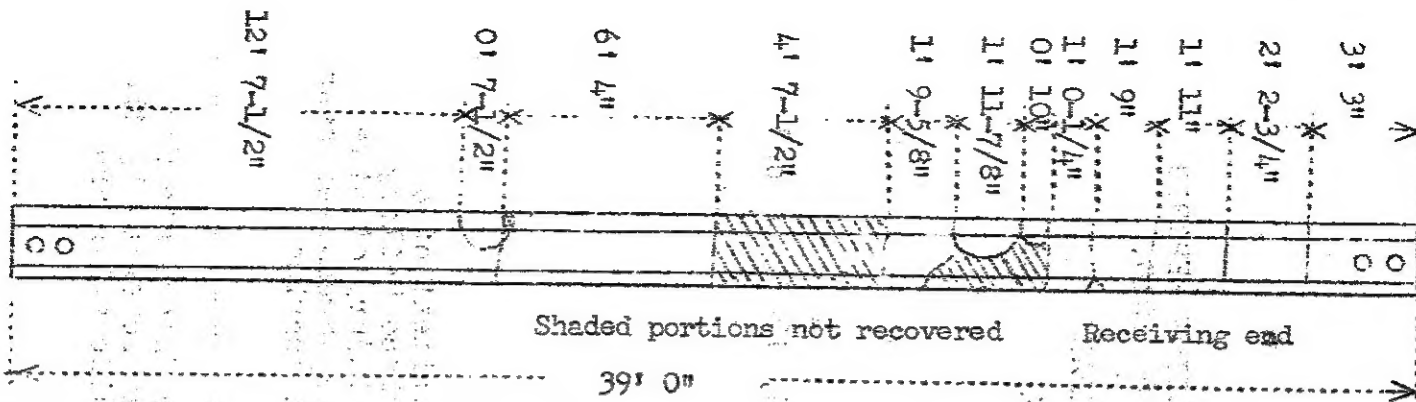
REPORT OF THE COMMISSION<sup>1</sup>

CLARKE, Commissioner:

On October 24, 1953, there was a derailment of a passenger train on the St. Louis-San Francisco Railway near Edward, Kans., which resulted in the injury of nine passengers, six railway-mail clerks, one baggageman-express messenger, one train porter, and two train-service employees.

<sup>1</sup>

Under authority of section 17 (2) of the Interstate Commerce Act the above-entitled proceeding was referred by the Commission to Commissioner Clarke for consideration and disposition.



Report No. 3542  
 St. Louis San-Francisco Railway  
 Edward, Kans.  
 October 21, 1953

### Location of Accident and Method of Operation

This accident occurred on that part of the Northern Division extending between Fort Scott, Kans., and Springfield, Mo., 103.4 miles. In the vicinity of the point of accident this is a single-track line, over which trains are operated by timetable, train orders, and an automatic block-signal system. The accident occurred on the main track at a point 5.54 miles south of Fort Scott and 1.44 miles south of the station at Edward, Kans. From the north there are, in succession, a tangent 343 feet in length, a compound curve to the left, having a maximum curvature of  $6^{\circ}01'$ , 2,751 feet, a tangent 468 feet, and a  $2^{\circ}03'$  curve to the right 766 feet to the point of accident and 300 feet beyond. The grade is 1.0 percent descending southward at the point of accident.

In the vicinity of the point of accident the track is laid on a fill, the maximum height of which is 8 to 10 feet. The track structure consists of 110-pound rail, 39 feet in length, laid new in 1931 on an average of 24 treated ties to the rail length. It is fully tieplated with single-shoulder tieplates, and is spiked with four spikes per tieplate. It is provided with 4-hole 24-inch joint bars and from three to eight rail anchors per rail. It is ballasted with chats to a depth of 15 inches below the bottoms of the ties.

Automatic signal C 102.7, governing south-bound movements, is located 1.32 miles north of the point of accident.

The maximum authorized speed for passenger trains on this line is 70 miles per hour, but the speed is restricted to 50 miles per hour on the curve immediately north of the point of accident.

### Description of Accident

No. 105, a south-bound first-class passenger train, consisted of Diesel-electric units 2007 and 2011, coupled in multiple-unit control, three baggage cars, two mail-baggage cars, one baggage car, one coach-sleeping car, three chair cars, one cafe-lounge car, and two sleeping cars, in the order named. All cars were of all-steel construction. Both Diesel-electric units and the ninth and tenth cars were equipped with tightlock couplers. This train departed from Fort Scott at 1:30 a. m., 10 minutes late, passed Edward at 1:38 a. m., 12 minutes late, passed signal C102.7, which indicated Proceed, and while moving at a speed of 55 miles per hour the second to the eleventh cars, inclusive, and the front truck of the twelfth car were derailed at a point 1.44 miles south of Edward.

Separations occurred between the third and fourth cars, between the fifth and sixth cars, and between the sixth and seventh cars. The locomotive and the first three cars stopped with the front of the locomotive approximately 1,930 feet south of the point of derailment. The second and third cars stopped upright and approximately in line with the track. The fourth car stopped with the front end approximately 630 feet south of the point of derailment. It remained upright and in line with the track. The fifth car leaned to the east at an angle of about 45 degrees. The north end was 12 feet east of the track. The sixth car was overturned to the east and stopped with the south end against the north end of the fifth car, and the north end 33 feet east of the track. The seventh car remained upright and stopped with the south end against the north end of the sixth car, and the north end 24 feet east of the track. The eighth car leaned to the east at an angle of about 60 degrees, with the north end 48 feet east of the track. The ninth car remained upright, with its north end on the track structure. The tenth and the eleventh cars remained upright and on the track structure. The second and third cars were slightly damaged and the fourth to the eleventh cars, inclusive, were somewhat damaged.

The conductor and the flagman were injured.

The weather was clear at the time of the accident, which occurred at 1:40 a. m.

#### Discussion

As No. 105 was approaching the point where the accident occurred the speed was 55 miles per hour. The headlight was lighted brightly. The enginemen were maintaining a lookout ahead from the control compartment at the front of the locomotive. The members of the train crew were in various locations in the cars of the train. Signal C102.7 indicated Proceed. The employees on the locomotive said they noticed nothing unusual when the locomotive passed the point at which the derailment occurred. They were not aware that anything was wrong until the brakes were applied in emergency as a result of the derailment. The conductor and the train porter were injured in the accident and were not questioned during this investigation. The flagman said that before the derailment occurred the cars were riding smoothly and there was no indication of defective track or equipment.

Examination of the locomotive and the cars after the accident occurred disclosed no condition which could have caused or contributed to the cause of the accident. There was no indication of dragging equipment nor of an obstruction having been on the track.

After the accident occurred a broken rail was found in the east side of the track. This rail was rolled by the Tennessee Coal and Iron Division of the United States Steel Company in August, 1930. It was broken into many pieces, 12 of which were recovered. The first three breaks occurred at points, respectively, 3 feet 3 inches, 5 feet 5-3/4 inches, and 7 feet 4-3/4 inches south of the receiving end of the rail. Each of these breaks occurred between ties. Examination of the rail disclosed that prior to the time of the accident transverse fissures had existed in the head of the rail at the first break and at the third break. The fissure at the first break covered 10 to 12 percent of the area of the head, and the fissure at the third break covered 18 to 20 percent of the area of the head. Neither fissure extended to the surface of the rail, and neither could be detected by visual inspection. Apparently the rail was broken under the front portion of No. 105. After the first break occurred, evidently the broken end was struck with sufficient force to cause the second and third breaks, and a broken piece of rail was dislodged.

A rail-defect detector car was last operated over this territory on June 26, 1953. At that time a defective rail was found in the west side of the track two rail-lengths south of the point of accident. The roadmaster last inspected the track in this vicinity from a track motor-car 4 days before the accident occurred, and from the rear of a train on the day before the accident occurred. An assistant district gang foreman inspected the track in the vicinity of the point of accident from a track motor-car on the day before the accident occurred. No defective condition was observed. A north-bound freight train passed over the point of derailment about 4 hours before the accident occurred. The crew of this train made no report of an unusual condition of the track.

#### Cause

This accident was caused by a broken rail.

Dated at Washington, D. C., this fourteenth day of December, 1953.

By the Commission, Commissioner Clarke.

(SEAL)

GEORGE W. LAIRD,  
Secretary.



1. The first part of the report is a general  
description of the project and its objectives.  
It includes a brief history of the project and  
a statement of the purpose of the study.

2. The second part of the report is a detailed  
description of the methodology used in the study.  
This includes a description of the data sources,  
the sampling method, and the statistical methods  
used to analyze the data. It also includes a  
description of the instruments used to collect  
data and a description of the procedures used  
to ensure the reliability and validity of the  
data.

3. The third part of the report is a description  
of the results of the study. This includes a  
description of the data and a description of the  
statistical analysis. It also includes a description  
of the conclusions drawn from the data and a  
description of the implications of the study.

4. The fourth part of the report is a discussion  
of the study and its findings. This includes a  
description of the strengths and weaknesses of the  
study and a description of the implications of the  
study for future research.

5. The fifth part of the report is a conclusion  
and a list of references. This includes a  
summary of the study and its findings and a  
list of the sources used in the study.